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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,398	04/18/2002	John Bradford Reitz	RD29180-2	7869

23413 7590 06/12/2006

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EXAMINER

TUROC, DAVID P

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,398

Applicant(s)

REITZ ET AL.

Examiner

David Turocy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-17 and 37-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-17 and 37-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The applicant's amendments, filed 3/23/2006, have been fully considered and reviewed by the examiner. The examiner notes the amendments to the independent claims 1, 42, and 53. Claims 1-17, 37-53 remain pending in the instant application.

Response to Arguments

2. Applicant's arguments filed 3/23/2006 have been fully considered but they are not persuasive.

The applicant has argued against the Mishina reference, stating the reference discloses a process for providing a coating film having fine irregularities and "it was impossible to obtain a smooth film", which does not meet the applicant's claimed requirement of "less than 10 asperities over the surface of the coating". The examiner disagrees. Since both the instant application and the process as taught by Mishina disclose the same process steps, any differences in properties between the claimed invention and that of Mishina et al. must have been caused by process variables not claimed in the instant application. The prior art and the present claims teach all the same process steps and thus the results obtained by applicants process must necessarily be the same as those obtained by the prior art. Therefore by spinning a solution of a solvent and a thermoplastic polymer, it must necessarily result in a film with less than or equal to 10 asperities, each with a height as claimed. Either 1) the applicant and the prior art have different requirements for coating uniformity, i.e. Mishina

requires a completely uniform (0 asperities) and 10 asperities results in a non smooth film or 2) the applicant is using other process steps or parameters that are not shown in the claims.

The examiner notes the applicant's statement regarding US Patent 6715200 by Feist et al.; therefore the reference is disqualified as prior art under 103(c).

All other applicants' arguments are moot because they are directed at newly added limitations not present at the time of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17, 37-41 and 49-53 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. The phrase "is unreactive" is indefinite because the claim does not set forth to what the thermoplastic polymer is unreactive, in other words the claims and the specification does not clearly define what a thermoplastic is unreactive, while the examiner notes the statement in the specification to require a certain quantity of reactive end groups, such a requirement does not clearly define a what conditions result in the unreactive thermoplastic. The examiner can envisage any multitude of conditions by which a material "is unreactive" or alternatively conditions, which a material is reactive and it is unclear what conditions are encompassed by such a limitation. For the

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purposes of applying art the examiner is going to define "unreactive" to be a compound having less than 20 mg/Kg of any of the functional groups listed in claim 4.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 4-5, 7, 9-11, 14-17, 38, and 51-53 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5916632 by Mishina et al, hereafter Mishina.

Mishina discloses a coating process, including dispensing a solution of a solution solvent and 6 wt% polyimide polymer, where the solution solvent consists of butyrolactone (Column 6, lines 40-50). Mishina exemplifies printing the polyimide on the substrate surface, but discloses known techniques for coating include spin coating and printing (Column 4, lines 44-46). Mishina discloses coating the substrate and removing the solvent to form a coating on the substrate, wherein the polyimide precursor was previously reacted to form a nonreactive polyimide because it does not include a carboxylic reactive end group (Column 6, lines 40-50). Mishina et al. teaches the solvent is butyrolactone which has a boiling point in the claimed range, a polarity index of greater than or equal to about 4.0, and a pH in the range of 5.5-9, as evidenced by Applicant's own specification and dependent claim 9.

While the examiner notes Mishina discloses using the process it is impossible to form a smooth surface, Mishina et al. is silent with regard to the number of asperities or the height of the asperities in the final coating, it is the Examiner's position that the final coating of Mishina et al.'s process would necessarily have less than or equal to 10 asperities, each with a height as claimed, because the process steps and materials of Mishina et al. are materially similar to the claimed process. Any differences in properties between the claimed invention and that of Mishina et al. must have been caused by process variables not claimed in the instant application. The prior art and the present claims teach all the same process steps and thus the results obtained by applicants process must necessarily be the same as those obtained by the prior art. Therefore by spinning a solution of a solvent and a thermoplastic polymer, it must necessarily result in a film with less than or equal to 10 asperities, each with a height as claimed. Either 1) the applicant and the prior art have different definitions for a spin coating and/or a uniform coating (i.e. the number of asperities), or 2) the applicant is using other process steps or parameters that are not shown in the claims.

As to claims 10, 14, and 16, it is noted that the solvents listed above do not comprise halogens, nor does the coating solution comprise the claimed particles or water. However, it is noted that the claims are broad enough to read on 0 wt% halogens, 0 wt% particles, and 0 wt% water.

As to claim 11, the solvents of Mishina et al. must necessarily have the claimed dielectric constant since the solvents taught by Mishina et al. are among the solvents disclosed in the specification.

As to claims 15 and 17, Mishina et al. is silent with regard to the peel strength and haze level. However, as discussed above, the process steps and materials of Mishina et al. are materially similar to the claimed process, therefore the coating of Mishina et al. must necessarily have the claimed peel strength and haze level. Any differences in properties between the claimed invention and that of Mishina et al. must have been caused by process variables not claimed in the instant application.

8. Claims 1, 4-5, 7, 9-11, 14-17, 37-38, and 51-53 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5177181 by Rosenfeld et al, hereafter Rosenfeld.

Rosenfeld discloses a method of spin coating process, including dispensing a solution of a solution solvent and 10 wt% polyimide polymer, where the solution solvent consists of N-methyl pyrrolidone, dimethyl formamide, dimethylacetamide, etc. (Column 6, lines 20-38). Rosenfeld discloses spinning the substrate and removing the solvent to form a coating on the substrate (Column 11, line 35-Column 12, line 68). While Rosenfeld discloses crosslinking the polyimide using light, the polyimide is clearly unreactive to process condition prior to exposing to the light. Additionally Rosenfeld does not teach the use of a polyimide having carboxylic acid functional groups, and the claims are broad enough to read on a polymer having no carboxylic acid functional

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groups and is therefore deemed unreactive. Rosenfeld teaches the solvent is N-methyl pyrrolidone, dimethyl formamide, dimethylacetamide which has a boiling point in the claimed range, a polarity index of greater than or equal to about 4.0, and a pH in the range of 5.5-9, as evidenced by Applicant's own specification and dependent claim 9.

While the examiner notes Rosenfeld is silent with regard to the number of asperities or the height of the asperities in the final coating, it is the Examiner's position that the final coating of Rosenfeld et al.'s process would necessarily have less than or equal to 10 asperities, each with a height as claimed, because the process steps and materials of Rosenfeld et al. are materially similar to the claimed process. Any differences in properties between the claimed invention and that of Rosenfeld et al. must have been caused by process variables not claimed in the instant application. The prior art and the present claims teach all the same process steps and thus the results obtained by applicants process must necessarily be the same as those obtained by the prior art. Therefore by spinning a solution of a solvent and a thermoplastic polymer, it must necessarily result in a film with less than or equal to 10 asperities, each with a height as claimed. Either 1) the applicant and the prior art have different definitions for a spin coating and/or a uniform coating (i.e. the number of asperities), or 2) the applicant is using other process steps or parameters that are not shown in the claims.

As to claims 4-5 and 37, that Rosenfeld et al. does not teach the use of a polyimide having carboxylic acid functional groups, and the claims are broad enough to read on a polymer having no carboxylic acid functional groups.

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As to claims 10, 14, and 16, it is noted that the solvents listed above do not comprise halogens, nor does the coating solution comprise the claimed particles or water. However, it is noted that the claims are broad enough to read on 0 wt% halogens, 0 wt% particles, and 0 wt% water.

As to claim 11, the solvents of Rosenfeld et al. must necessarily have the claimed dielectric constant since the solvents taught by Rosenfeld et al. are among the solvents disclosed in the specification.

As to claims 15 and 17, Rosenfeld et al. is silent with regard to the peel strength and haze level. However, as discussed above, the process steps and materials of Rosenfeld et al. are materially similar to the claimed process, therefore the coating of Rosenfeld et al. must necessarily have the claimed peel strength and haze level. Any differences in properties between the claimed invention and that of Rosenfeld et al. must have been caused by process variables not claimed in the instant application.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2-3, 6, 12-13, 42-44 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenfeld et al.

Rosenfeld et al. is applied for the reasons set forth above in section 5.

As to claims 2-3, 6, 42-44, and 47-48, Rosenfeld et al. is silent with regard to the weight average molecular weight and Tg of the polyimide resin. It would have been obvious to one skilled in the art to have selected an optimal polyimide material depending upon the end use and desired qualities of the resulting coating in the absence of a showing of criticality.

As to claims 12-13, Rosenfeld et al. is silent with respect to its coating solution's viscosity. Coating viscosity is a known cause-effective variable. It would have been obvious for one skilled in the art to have optimized the viscosity through routine experimentation depending upon the desired coating thickness, the spin speeds and times used, etc. in the absence of a showing of criticality.

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12. Claims 45-46 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6167399 by Naito et al, hereafter Naito in view of Rosenfeld et al.

Naito, teaching of a method for making data storage unit, discloses organic films can be utilized as a coating on the disc (abstract, column 7, lines 5-15). Naito discloses applying a coating by spin coating using a solution containing a resin, which inherently has a solvent (Column 7, lines 39-44). Naito discloses such resins include polyimides, polysulfones and polyethersulfones (Column 34, lines 46-60). Naito discloses that such resin coatings on data storage discs are known in the art to be equivalents. Naito fails to disclose the solvent as claimed.

However, Rosenfeld et al. is applied for the reasons set forth above, in addition Rosenfeld discloses providing the solution solvent and resin results in a uniform film on a substrate by spinning.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Naito to use the resin/solvent solution as suggested by Rosenfeld to provide a desirable coating on a storage device to reap the benefits of a uniform coating with the reasonable expectation of success.

Naito in view of Rosenfeld fails to explicitly disclose a surface area of 6500 mm². However, Naito discloses utilizing a storage disk has a diameter of 76.2 mm and 120 mm, which results in a surface area of from 4566 mm² and 11325 mm² (examples), which is inclusive of the surface area claimed. In the case where the claimed ranges

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"overlap or lie" inside ranges disclosed by prior art a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257 191 USPQ 90. See MPEP 2144.05.

13. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenfeld et al. in view of US Patent 6197399 by Naito and further in view of US Patent 5055631 by Sartori et al.

Rosenfeld et al. is applied for the reasons set forth above.

Rosenfeld et al. fails to teach of a thermoplastic polymer consisting of polysulfones and/or polyethersulfones. However, Naito, teaching of a method for making data storage unit, discloses organic films can be utilized as a coating on the disc (abstract, column 7, lines 5-15). Naito discloses applying a coating by spin coating using a solution containing a resin, which inherently has a solvent (Column 7, lines 39-44). Naito discloses such resins include polyimides, polysulfones and polyethersulfones (Column 34, lines 46-60). Naito discloses that such resin coatings on data storage discs are known in the art to be equivalents. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

Rosenfeld et al in view of Naito teach of applying a polysulfone resin coating by solution using a solvent, but fail to disclose a proper solvent to prepare a solution including a polysulfone.

However, Sartori et al., discloses a dimethyl-formamide is known in the art to properly dissolve polysulfone into a solution capable of forming coatings (Column 3, lines 41-46). Dimethyl-formamide has a boiling point in the claimed range, a polarity index of greater than or equal to about 4.0, and a pH in the range of 5.5-9, as evidenced by Applicant's own specification and dependent claim 9

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Rosenfeld et al in view of Naito to use the dimethyl-formamide solvent suggested by Sartori et al. to provide a desirable solution containing solvent and resin because Sartori et al. discloses dimethyl-formamide is known in the art to be a solvent for polysulfones and therefore would reasonably be expected to effectively provide a solution of polysulfones and solvent for application as a coating to a recording media.

14. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenfeld et al. in view of US Patent 6197399 by Naito and further in view of Japanese Patent Abstract 1991-017337 by Kageyama et al.

Rosenfeld et al. is applied for the reasons set forth above in sections 5 and 9.

Rosenfeld et al. fails to teach of a thermoplastic polymer consisting of polysulfones and/or polyethersulfones. However, Naito, teaching of a method for making data storage unit, discloses organic films can be utilized as a coating on the disc (abstract, column 7, lines 5-15). Naito discloses applying a coating by spin coating

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using a solution containing a resin, which inherently has a solvent (Column 7, lines 39-44). Naito discloses such resins include polyimides and polycarbonates (Column 10, lines 10-20). Naito discloses that such resin coatings on data storage discs are known in the art to be equivalents. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

Rosenfeld et al in view of Naito teach of applying a polycarbonates resin coating by solution using a solvent, but fails to disclose a proper solvent to prepare a solution including a polycarbonates.

However, Kageyama et al., discloses a cresol is known in the art to properly dissolve polycarbonates into a solution capable of forming coatings (Abstract). Cresol has a boiling point in the claimed range, a polarity index of greater than or equal to about 4.0, and a pH in the range of 5.5-9, as evidenced by Applicant's own specification and dependent claim 9

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Rosenfeld et al in view of Naito to use the cresol solvent suggested by Kageyama et al. to provide a desirable solution containing solvent and resin because Kageyama et al. discloses cresol is known in the art to be a solvent for polycarbonates and therefore would reasonably be expected to effectively provide a solution of polycarbonate and solvent for application as a coating to a recording media.

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15. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenfeld et al. in view of US Patent 6197399 by Naito and further in view of US Patent 5589523 by Sawaoka et al. and US Patent 4842740 by Chung et al.

Rosenfeld et al. in view of Naito is applied for the reasons set forth above.

Rosenfeld et al. in view of Naito fails to teach of a thermoplastic polymer consisting of polyphenylene ethers and/or polyarylates. However, Sawaoka et al, teaching of known thermosetting resins, discloses resins such as polyarylate, polycarbonate, polyimide, and polysulfone. Sawaoka et al discloses that such thermosetting resin coatings are known in the art to be equivalents. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

Rosenfeld et al in view of Naito and further in view of Sawaoka et al teach of applying a polyarylate resin coating by solution using a solvent, but fails to disclose a proper solvent to prepare a solution including a polyarylate.

However, Chung et al discloses N,N-dimethyl formamide, N,N-dimethyl acetamide, dimethyl sulfoxide are known in the art to properly dissolve polyarylate into a solution capable of forming coatings (Column 6, lines 41-47). N,N-dimethyl formamide, N,N-dimethyl acetamide, dimethyl sulfoxide has a boiling point in the claimed range, a polarity index of greater than or equal to about 4.0, and a pH in the range of 5.5-9, as evidenced by Applicant's own specification and dependent claim 9

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Rosenfeld et al in view of Naito and further in view of Sawaoka et al to use solvent suggested by Chung et al to provide a desirable solution containing solvent and resin because Chung et al discloses N,N-dimethylformamide, N,N-dimethylacetamide, dimethylsulfoxide are known in the art to be a solvent for polyarylates and therefore would reasonably be expected to effectively provide a solution of polyarylates and solvent for application as a coating to a recording media.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 5447767 by Tanabe et al. discloses typical resins associated with a compact discs (Column 12).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy
AU 1762

A handwritten signature in black ink, appearing to read 'T. Meeks', with a large, stylized loop at the end.

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER